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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,500	07/03/2001	Chia-Pin Lin	JCLA7208	5186

7590 04/14/2004  
J.C. PATENTS INC.  
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EXAMINER
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GOFF II, JOHN L

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 04/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/901,500	LIN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	John L. Goff	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10, 11, 13-20, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) 10, 11, 22 and 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 13-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/20/04 has been entered. It is noted in the future the status identifier for claim 20 should be changed from "previously amended" to - - previously presented - -

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 112***

3. Claims 1-8 and 13-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 requires "laminating metal foils onto the isolating layers formed on the surfaces of the isolating layers." It is unclear what is meant by "onto the isolating layers formed on the surfaces of the isolating layers." It appears the claim should require - - laminating metal foils onto the isolating layers formed on the surfaces of the substrate. - -. This is the interpretation given by the examiner. Claim 6 and 20 require "a thickness of the isolating layers is controlled by equipment parameters regardless of the type of the metal foil that is used". However, as amended claims 1 and 13 require "wherein the thickness of the isolating

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material is determined according to the type of metal foil". Thus, claims 1 and 13 as amended specifically require the thickness of the isolating layers to be determined according to the type of metal foil used and as such claims 6 and 20 should be cancelled.

***Claim Rejections - 35 USC § 103***

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-4, 6, 7, 13-16, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosomi et al. (U.S. Patent 5,806,177) in view of the admitted prior art (Specification pages 1, 2, and 6).

Hosomi et al. disclose a method for laminating copper foil onto an internal printed circuit board (PCB). Hosomi et al. teach the method comprises providing an internal PCB (e.g. epoxy-glass fabric substrate having a circuit formed on at least one of its surfaces), coating isolating material (e.g. liquid epoxy polymer resin) onto the upper and lower surfaces of the internal PCB using a roller coater to form isolating layers, curing the isolating layers to a predetermined thickness, laminating metal foils (e.g. copper foils) also coated with isolating material (e.g. liquid epoxy resin) onto the isolating layers of the internal PCB to form a multilayer PCB, and then

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heating and pressing the multilayer PCB to completely cure the isolating layers and secure the metal foils to the internal PCB (Figures 1A-2C and Column 3, lines 35-67 and Column 4, lines 1-3 and Column 10, lines 7-21 and 43-37 and Column 11, lines 1-5). It is noted Hosomi et al. are silent as to determining the thickness of the isolating layers according to the type of metal foil used. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any well known and conventional technique to determine the thickness of the insulating layers taught by Hosomi et al. such as according to the type of metal foil used as it was well known in the art to determine the thickness in this manner as shown for example by the admitted prior art and only the expected results would be achieved.

The admitted prior art discloses it was known to laminate copper foil to a substrate through a layer of insulating material to form a PCB (Page 1, lines 17-23). The admitted prior art teaches it was known that the thickness of the insulating layer was restricted to the type of copper foil used (Page 1, lines 23-24 and Page 2, lines 1-2 and Page 6, lines 16-18). Furthermore, the admitted prior art teaches that the thickness of the isolating layer of the PCB can affect the Radio frequency (RF) properties and impedance of the circuit. Therefore the thickness of the PCB is controlled according to the requirements of the circuit properties (Page 2, lines 3-5).

Regarding claims 6 and 20, it is noted Hosomi et al. teach a roller coater to apply the isolating material to the internal PCB thus satisfying the limitation (i.e. controlling the thickness of the isolating material using the application equipment).

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6. Claims 5 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosomi et al. and the admitted prior art as applied to claims 1-4, 6, 7, 13-16, 18, and 20 above, and further in view of Takahashi et al. (U.S. Patent 4,400,438).

Hosomi et al. and the admitted prior art teach all of the limitations in claims 5 and 17 as applied above except for a teaching of using insulating material comprising polyimide. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the insulating material taught by Hosomi et al. material comprising polyimide or polyimide and epoxy as it was well known in the art to include polyimide in the insulating material to increase the heat resistant properties of the insulating material as shown for example by Takashi et al.

Takahashi et al. (particularly the background of Takashi et al.) disclose it was known in the art of forming PCBs to use as the insulating material one comprising polyimide or polyimide and epoxy as the polyimide provides not only excellent heat resisting properties but also good fire or flame retardant properties (Column 1, lines 15-23 and 35-37).

7. Claims 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosomi et al. and the admitted prior art as applied to claims 1-4, 6, 7, 13-16, 18, and 20 above, and further in view of Yates et al. (U.S. Patent 6,270,648).

Hosomi et al. and the admitted prior art teach all of the limitations in claims 8 and 19 as applied above except for a teaching on using treated copper foils, although it is noted Hosomi et al. are not limited to any particular type. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the copper foils taught by Hosomi et al. ones

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that have been treated to produce low profile, high profile, or reverse copper foils to increase their adhesive strength as was well known in the art as shown for example by Yates et al.

Yates et al. disclose that it was known to treat copper foils to produce high profile, low profile, or reverse copper foils to increase the adhesion strength of the foils to a base substrate in forming metal clad laminates (e.g. PCBs) (Column 4, lines 38-67 and Column 5, lines 1-15).

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-8 and 13-20 have been considered but are moot in view of the new ground(s) of rejection. Applicant argues, "Specifically, none of the citations discloses that the substrate has a circuit formed on its surface and an isolation material is coated onto the substrate surface having the circuit thereon." Hosomi et al. is applied to address this limitation. Applicant further argues, "Further, none of the cited references teaches or suggests that the thickness of the isolating material is determined according to the type of the metal foil." The admitted prior art is applied to address this limitation.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **(571) 272-1216**. The examiner can normally be reached on M-F (7:15 AM - 3:45 PM).

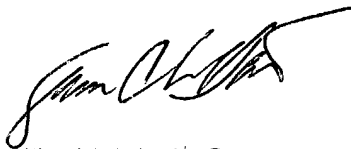
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John L. Goff  
April 5, 2004



**SAM CHUAN YAO**  
**PRIMARY EXAMINER**